

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L13	2	((("6632724") or ("6013563")).PN.	US-PGPUB; USPAT	OR	OFF	2006/01/10 10:30
L14	4	((("5993677") or ("5804086") or ("5714395") or ("5374564")).PN.	US-PGPUB; USPAT	OR	OFF	2006/01/10 10:25
L15	27128	(cleav\$3 same (wafer or substrate))	US-PGPUB; USPAT	OR	ON	2006/01/10 10:53
L16	10287	15 and energy	US-PGPUB; USPAT	OR	ON	2006/01/10 10:43
L18	9555	16 and (separat\$3 or detach\$4 or removing)	US-PGPUB; USPAT	OR	ON	2006/01/10 10:33
L20	6166	18 and releas\$3	US-PGPUB; USPAT	OR	ON	2006/01/10 10:33
L21	1562	18 and (releas\$3 with (wafer or substrate))	US-PGPUB; USPAT	OR	ON	2006/01/10 10:34
L22	1400	21 and transfer\$4	US-PGPUB; USPAT	OR	ON	2006/01/10 10:35
L23	389	22 and (energy same (cleav\$3))	US-PGPUB; USPAT	OR	ON	2006/01/10 10:38
L24	45	23 and @ad<"19970512"	US-PGPUB; USPAT	OR	ON	2006/01/10 10:52
L25	47	((francois near3 henley) or (nathan near3 cheung)) and @ad<"19970512"	US-PGPUB; USPAT	OR	ON	2006/01/10 10:42
L26	4025	(cleav\$3 same (wafer or substrate))	USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/10 10:43
L28	184	26 and (energy same cleav\$3)	USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/10 10:52
L29	3153	438/455,528,458,459,526,974.ccls.	US-PGPUB; USPAT	OR	ON	2006/01/10 10:52
L30	924	29 and @ad<"19970512"	US-PGPUB; USPAT	OR	ON	2006/01/10 10:53
L31	2	(cleav\$3 and (wafer or substrate or workpiece) and energy and (film or layer) and transferring and (releasing or detaching or detachment or separating or separation or separated)).clm.	US-PGPUB; USPAT	OR	ON	2006/01/10 10:55

US-PAT-NO: 5863830

DOCUMENT-IDENTIFIER: US 5863830 A

TITLE: Process for the production of a structure having a thin semiconductor film on a substrate

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Claims Text - CLTX (1):

1. A process for the production of a structure having a semiconductor thin film (4) adhering to a target substrate (24), comprising the following steps:

Claims Text - CLTX (2):

a) producing a first structure having a thin semiconductor film on a first substrate (2) to form a thin film-first substrate assembly, the thin film having a first free face (10) called the front face and a second face (8) called the rear face bonded to the first substrate by a first bonding energy E.sub.0, and

Claims Text - CLTX (3):

b) transferring the thin film (4) from the first substrate (2) to the target substrate (24), said transfer involving both a tearing of the thin film (4) from the first substrate (2) by application to the thin film-first substrate assembly tearing away forces able to overcome the first bonding energy and adhesive contacting of the thin film (4) with the target substrate (24), said transferring being accomplished by

Claims Text - CLTX (4):

b.sub.1) the adhesive contacting of a manipulator (12) with the first face (10) of the thin film (4), the adhesive contact being established with a second bonding energy E.sub.1 exceeding the first bonding energy,

Claims Text - CLTX (5):

b.sub.2) separating of the thin film (4) and the first substrate (2) by tearing away the thin film (4) level with the second face (8) and the first substrate, and

Claims Text - CLTX (6):

b.sub.3) adhesive contacting of the second face of the thin film (4) with

the target substrate (24) with a third bonding energy E.sub.2 and separating of the thin film (4) from the manipulator (12).

Claims Text - CLTX (7):

2. The process according to claim 1, characterized in that the third bonding energy E.sub.2 exceeds the second bonding energy E.sub.1.

Claims Text - CLTX (8):

3. The process according to claim 1, characterized in that the first substrate (2) has an expansion coefficient substantially identical to the expansion coefficient of the thin film.

Claims Text - CLTX (10):

5. The process according to claim 1, characterized in that the thin film on the first substrate is obtained by:

Claims Text - CLTX (11):

an implantation of ions of rare gas or hydrogen in a supplementary substrate through its surface so as to generate a layer of gaseous microbubbles extending substantially in accordance with a plane defining in the supplementary substrate a surface thin film,

Claims Text - CLTX (12):

the adhesive contacting of the thin film and the first substrate with the first bonding energy, and

Claims Text - CLTX (13):

a heat treatment, which by a crystalline rearrangement effect and by a pressure effect in the gaseous microbubbles brings about a cleaving separating the film from the remainder of the supplementary substrate.

Claims Text - CLTX (14):

6. The process according to claim 1, characterized in that during step b.sub.3), the separation of the thin film (4) and the manipulator takes place after the adhesive contacting of the film (4) with the target substrate (24).

Claims Text - CLTX (15):

7. The process according to claim 1, characterized in that during step b.sub.3), the separation of the thin film (4) and the manipulator takes place prior to the adhesive contacting of the film (4) and the target substrate (24).

Claims Text - CLTX (16):

8. The process according to claim 7, characterized in that during step b.sub.3), the manipulator and thin **film** are immersed in a chemical bath to dissolve the manipulator, the **film** being collected on the target **substrate**.

Claims Text - CLTX (17):

9. The process according to claim 7, characterized in that during step b.sub.3), the thin **film** (4) is adhesively contacted with the target **substrate** (24) by its first or second face.

Claims Text - CLTX (18):

10. The process according to claim 1, characterized in that during step b.sub.1), the adhesive contacting between the manipulator (12) and the thin **film** (4) is brought about by electrostatic forces and during step b.sub.3), the **separation of the film** (4) and the manipulator (12) is obtained by eliminating said electrostatic forces.

Claims Text - CLTX (20):

12. The process according to claim 1, characterized in that the adhesive contact between the thin **film** and the manipulator is brought about with an adhesive.

Claims Text - CLTX (21):

13. The process according to claim 1, characterized in that the target **substrate** has a contacting surface above the surface of one of the first and second faces of the thin **film**.

Claims Text - CLTX (22):

14. The process according to claim 1, characterized in that the thin **film** (4) is a monocrystalline, semiconductor material **film**.